METHOD FOR SEPARATING IMAGE SEQUENCES STORED ON SUPPORTS SUCH AS MOTION-PICTURE FILM, VIDEO TAPE OR SUCH LIKE

CROSS-REFERENCED TO RELATED APPLICATION

This application claims priority of International application number PCT/DE99/04028, filed December 10, 1999, which in turn claims priority to German patent application number 198 49 087.3, filed December 10, 1998.

FIELD OF THE INVENTION

The invention relates to a method for separating image sequences, stored on media such as motion-picture films, video tapes or the like, into individual sequences.

BACKGROUND OF THE INVENTION

It is known to manually split successive scenes of a motion-picture film or video tape into individual sequences in order to then compile, discard or store the individual sequences, if appropriate, in a different order. In this case, the beginning of an individual sequence is usually initiated by an individual start image or a plurality of start images, for example by the recording of a film clapperboard with the assignment noted thereon.

The image sequences may be contained on various recording media, such as motion-picture films, video tapes, or electronic storage media, such as CDs or the like. In many applications, recording is effected in parallel on a motion-picture film and an electronic storage medium, the electronically stored image sequence being reflected out of an optical beam path of a motion-picture camera and being converted by means of a video chip or a video camera into video signals which are stored on the electronic storage medium.

US-A-5,537,530 discloses a method for separating image sequences stored on video tapes into individual sequences, in which sequence changes of a first type which are based on a change in the mean brightness of successive images which exceed or fall below a predetermined amount and also sequence changes of a second type which are based on a change in the image content of successive images are detected and separation markers for the automatic separation of the image sequences into individual sequences are set.

In numerous applications, automatic separation of, in particular, digitized films into individual sequences is desirable, without the need for manual separation or the recording of start images for introducing an individual sequence. In the medical field, in particular, such automatic separation of digitized films into individual sequences is desirable in order that, directly after recording of the image sequences, individual sequences are made available for diagnosis. In this case, what is crucially important is that first, no images are lost during the automatic separation, and that second, a high identification rate is achieved for resolving the image sequence into individual sequences.

SUMMARY OF THE INVENTION

The present invention provides a method for automatic separation of image sequences, in particular of digitized motion-picture films, video recordings or the like, which guarantees a highest possible identification rate of the individual sequences and ensures that no images are lost during application of the separation method.

The solution according to the invention first maximizes an identification rate of the individual sequences and second maximizes the retention of all the images of the image sequences of a motion-picture film, video tape or the like.

The solution according to the invention is suitable, in particular, for realization in a data processing device with corresponding hardware components and can be used both for stand-alone applications and in network systems and also for remote data transmissions.

In one practical application, it is advantageous to display a selected individual image, preferably the first individual image in each individual sequence, as an icon on a monitor, so that a relevant individual sequence can be started by clicking on the icon. A sequence of individual sequences can be started for viewing by successively clicking on a plurality of such icons.

DETAILED DESCRIPTION OF THE INVENTION

The concept underlying the invention will be explained in more detail below using an exemplary embodiment.

For the application of the method according to the invention and of the software derived therefrom for automatically separating digitized cardiological films into individual sequences, 35 mm motion-picture films and S-VHS video tapes are used as media in the exemplary embodiment. A total of three types of sequence changes can be observed on these media: